

REMARKS

Claims 1-5 and 7-9, and 14-20, are all the claims pending in the application. Previously, claims 6 and 10-13 were canceled without prejudice or disclaimer. New claims 15-20 have been added to further define the invention.

Restriction

The Examiner withdrew claim 14 from consideration as being directed to a non-elected invention. New claims 15-20 depend from one of claims 1, 5, and 7-9, which were examined with the elected invention. Accordingly, new claims 15-20 also should be examined with the elected invention.

Claim Rejections - 35 U.S.C. § 102

The Examiner rejected claim 5 as being anticipated by US Patent 2,327,237 to Baden (hereinafter Baden). Applicant respectfully traverses this rejection because Baden fails to disclose each of the elements as set forth and arranged in the claim.

Claim 5 sets forth a retainer for rolling bearings comprising: a rolling element receiving pocket for receiving a rolling element, said wherein said pocket comprises a first pocket surface facing toward the revolving direction of the retainer; said pocket is defined by a pair of ring-shaped side plates and a pair of pillars each having end portions which are respectively connected to the ring-shaped side plates; a first pocket surface is formed on each of the pillars; the first pocket surface is formed in an arc-shaped configuration in a cross section along the radial direction of the retainer; roller run-out preventing portions are formed at end portions of the pillars in the radial direction of the retainer; and a sectional configuration of the run-out preventing portion along the radial direction of the retainer on the pillar side is formed into a curved line smoothly connecting to the first pocket surface and having a radius of curvature protruding toward the pocket.

For example, as shown in Figs. 4, 6, and 7, one embodiment of the invention consistent with that set forth in claim 5 is a retainer for rolling bearings comprising: a rolling element

receiving pocket 1 for receiving a rolling element, wherein said pocket 1 comprises a first pocket surface 1a facing toward the revolving direction Y of the retainer; said pocket is defined by a pair of ring-shaped side plates 3 and a pair of pillars 2 each having end portions which are respectively connected to the ring-shaped side plates; a first pocket surface 1a is formed on each of the pillars; the first pocket surface 1a is formed in an arc-shaped configuration (R1) in a cross section along the radial direction of the retainer; roller run-out preventing portions 1d are formed at end portions of the pillars in the radial direction Z of the retainer; and a sectional configuration of the run-out preventing portion 1d along the radial direction of the retainer on the pillar side is formed into a curved line smoothly connecting to the first pocket surface 1a and having a radius of curvature R2 protruding toward the pocket.

More specifically, as shown in Fig. 7 for example, the pocket surface 1a has a first radius of curvature R1 and the roller run-out preventing portions 1d are formed in a curved line having a second radius of curvature R2 protruding toward the pocket.

In contrast to that set forth in claim 5, Baden discloses a pocket surface 28 having a singular constant radius of curvature. As described by Baden, the roller pockets are “of substantially the curvature of the roller, substantially the entire cured surfaces of the opposed pockets contacting with the curved surface of the roller when the roller is sprung into said pocket ...”¹ Baden goes on to describe that this curvature is formed by “downward movement of the tool 21 ... [which] gives the material between 17 to 18 a curvature corresponding to the curvature of the contour of the tool, which is like that of the roller or other desired contour.”² Also, see Baden at: page 2, left column, lines 2-5; and page 2, right column, lines 10-16, 18-22. In each of these instances, Baden describes the curve as having a single radius of curvature, and one that matches the radius of the rollers.

It is only at page 2, right column, lines 68-70, that Baden discloses that instead of “a cylindrical surface, a curved surface with different radii of curvatures can be used.” However,

¹ Baden at page 1, left column, lines 27-36.

² Baden at page 2, left column, lines 18-23.

Baden does not disclose the relationship between the two radii of curvature with respect to the pocket. That is, Baden discloses one radius of curvature that forms the pocket surface 28. The “different” radius of curvature is not described as being “smoothly connecting to” the first radius of curvature, and is not described as “protruding toward said pocket”, as is set forth in claim 5. Thus, Baden fails to disclose at least: a first pocket surface formed in an arc-shaped configuration in a cross section along the radial direction of the retainer; and a roller run-out preventing portion formed into a curved line smoothly connecting to the first pocket surface and having a radius of curvature protruding toward the pocket, as set forth in claim 5.

For at least any of the above reasons, Baden fails to anticipate claim 5.

Claim Rejections - 35 U.S.C. § 103

The Examiner rejected claims 1-4 and 7-9 as being unpatentable over Baden. Applicant respectfully traverses this rejection because Baden fails to teach or suggest all the elements as set forth and arranged in the claims.

Claim 1 sets forth a retainer comprising: a rolling element receiving pocket for receiving a rolling element, the pocket being defined by a pair of ring-shaped side plates and a pair of pillars each having end portions respectively connected to the ring-shaped side plates; a first pocket surface formed on each of the pillars, wherein one of said pillars has a chamfer portion provided thereon at a boundary between said one of said pillars and either an outside or inside diameter surface of the retainer.

For example, as shown in Figs. 3, 6, and 7, one embodiment consistent with that set forth in claim 1, is a retainer comprising: a rolling element receiving pocket 1 for receiving a rolling element, the pocket being defined by a pair of ring-shaped side plates 3 and a pair of pillars 2 each having end portions respectively connected to the ring-shaped side plates; a first pocket surface 1a formed on each of the pillars, wherein one of said pillars 2 has an R chamfer portion (R3e or R3i) provided thereon at a boundary between said one of said pillars and either an outside or inside diameter surface of the retainer. As set forth in the specification, due to the chamfer portion, lubricating capability is improved. See, for example, page 26, lines 5-24.

The Examiner asserts that Baden discloses all of the elements in the claim except for a specific length of a roller run-out preventing portion. Applicant agrees that Baden is deficient in this regard, and also asserts that Baden is further deficient as follows.

In contrast to that set forth in claim 1, Baden discloses that the contour forming the pocket of the roller, and the external peripheral curvature of the retainer meet at a node to form a fine edge, which Baden calls points 37 and 38. See, for example, Baden at page 2, left column, lines 53-74. Accordingly, Baden fails to disclose a chamfer provided on one of the pillars at a boundary thereof with either the inner or outer diameter surface of the retainer, as set forth in claim 1.

The Examiner then asserts that it would have been obvious to one of ordinary skill in the art to provide a specific length to Baden's roller-run out preventing portion. But the Examiner does not provide any motivation or reasoning as to why one of ordinary skill in the art would provide Baden with a chamfer portion. Accordingly, even assuming that one of ordinary skill in the art were motivated to provide Baden with a specific length of roller run-out preventing portion, the reference would still not teach or suggest a chamfer portion as set forth and arranged in claim 1.

For at least any of the above reasons, Baden fails to render obvious claim 1. Likewise, this reference fails to render obvious dependent claims 2 and 4.

Claims 7 and 8, similarly to claim 1, set forth a chamfer portion. Accordingly, for reasons similar to those set forth above with respect to claim 1, Baden fails to render obvious Applicant's claims 7 and 8.

Claim 9, similarly to claim 5, sets forth a first pocket surface formed in an arc-shaped configuration in a cross section along the radial direction of the retainer, and a roller run-out preventing portion formed into a curved line smoothly connecting to the first pocket surface and having a radius of curvature protruding toward the pocket. Accordingly, for reasons similar to those set forth above with respect to claim 5, Baden fails to disclose at least this feature. Further, the Examiner has not provided any reasoning as to why one of ordinary skill in the art would provide such a feature. Thus, for at least any of the foregoing reasons, Baden fails to render obvious Applicant's claim 9.

New Claims

New claims 15-20 have been added to further define the invention.

Claims 15 and 17-19 set forth a specific length of the run-out preventing portion, as removed from independent claims 1 and 7-9, respectfully. Accordingly, claims 15 and 17-19 should be allowable at least by virtue of their dependencies.

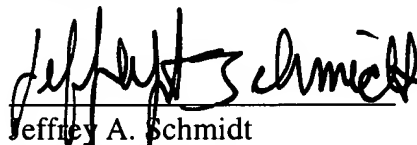
Claims 16 and 20 set forth a chamfer portion. Accordingly, for reasons similar to those set forth above with respect to claim 1, claims 16 and 20 should be allowable. Moreover, claims 16 and 20 should be allowable at least by virtue of their dependence on claims 5 and 9, respectfully.

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

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